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BIRCH STEWART KOLASCH & BIRCH
PO BOX 747
FALLS CHURCH, VA 22040-0747

EXAMINER

RICHER, AARON M

ART UNIT	PAPER NUMBER
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2628

NOTIFICATION DATE	DELIVERY MODE
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ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary	Application No.	Applicant(s)	
	09/944,341	SATO ET AL.	
	Examiner	Art Unit	
	AARON M. RICHER	2628	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 20 August 2008.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 9-17 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 9-17 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Arguments

1. Applicant's arguments filed August 20, 2008 have been fully considered but they are not persuasive.
2. Applicant argues that the '213 patent does not disclose a lookup table containing only characteristic points that are determined to be impossible to be interpolated by a process to be performed. Examiner notes that this was the purpose of bringing in the Horikawa reference (the '130 patent).
3. Applicant further argues that the '130 patent does not determine a minimal number of points needed to convert supplied image data into output image data. Examiner agrees with this, as was tentatively stated by examiner during applicant interview. However, the above statement is not what the claim actually states. Applicant argues that data points may be wholly discounted by the '130 patent, and examiner also agrees with this, but there is nothing in the claims stating that *all* characteristic points must be accounted for. The claims state that the lookup table must be composed of characteristic points, but do not state that all of said characteristic points must reside in the table.
4. Applicant further argues that the '130 patent does not disclose determining characteristic points based on a process to be performed. Examiner disagrees with this statement, noting that the '130 patent describes using the set of characteristic points to draw a model of the shape they were extracted from (fig. 7a-7b; also see fig. 1 for an overview of the method). The '130 patent therefore determines characteristic points

based on a drawing process that will later be performed. Applicant argues that the '130 patent is concerned with image model processing and not a color correction method, but examiner notes that one skilled in the art would not limit one's possible solutions to color correction methods. Rather, one skilled in the art would recognize that the problem of representing a color correction function with a minimal amount of memory is really a generic *sampling* problem, not a problem that is specific to color correction. Therefore, one skilled in the art would look to many varied references that involved sampling instead of limiting oneself to color correction references.

Claim Rejections - 35 USC § 101

5. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

6. Claims 9-17 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter.

7. Claims 9-14 are directed to an apparatus comprising a table and lookup means. Since the "lookup means" can possibly be read as software, as evidenced by the fact that the means are disclosed just in block diagram form, as opposed to specifying an apparatus, and a lookup table is simply a data structure, this "apparatus" claim can be read as directed entirely to software, rather than an actual physical apparatus.

Examiner further notes that the specification explicitly states that the table development means is software, providing further evidence that the "means" of the invention are software rather than hardware.

8. Claim 15 is directed to an apparatus comprising a color management apparatus and storage portion. Since these can be read as software, as evidenced by the fact that they are disclosed in block diagram form, as opposed to specifying an apparatus, this “apparatus” claim can be read as directed entirely to software, rather than an actual physical apparatus. Examiner notes that the “storage portion” could just be a lookup table, which is a software construct, rather than a physical memory. Examiner further notes that the specification explicitly states that the table development means is software, providing further evidence that the “means” of the invention are software rather than hardware.

9. Claim 17 is directed to an apparatus comprising a separator including a lookup table, table development means, and image data converting means. Since the “table development” and “image data converting” means can possibly be read as software, as evidenced by the fact that the means are disclosed just in block diagram form, as opposed to specifying an apparatus, and a lookup table is simply a data structure, this “apparatus” claim can be read as directed entirely to software, rather than an actual physical apparatus. Examiner further notes that the specification explicitly states that the table development means is software, providing further evidence that the “means” of the invention are software rather than hardware.

10. Claims 9-15 and 17 can therefore be read as directed to a program, *per se*. See MPEP 2106.01, which recites:

Data structures not claimed as embodied in computer-readable media are descriptive material *per se* and are not statutory because they are not capable of causing functional change in the computer. See, e.g., *Warmerdam*, 33 F.3d at 1361, 31 USPQ2d at 1760 (claim to a data structure *per se* held nonstatutory). Such claimed data structures do not define any structural and functional interrelationships between the data structure and other claimed aspects of the invention which permit the data structure's

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functionality to be realized. In contrast, a claimed computer-readable medium encoded with a data structure defines structural and functional interrelationships between the data structure and the computer software and hardware components which permit the data structure's functionality to be realized, and is thus statutory.

Similarly, computer programs claimed as computer listings per se, i.e., the descriptions or expressions of the programs, are not physical "things." They are neither computer components nor statutory processes, as they are not "acts" being performed. Such claimed computer programs do not define any structural and functional interrelationships between the computer program and other claimed elements of a computer which permit the computer program's functionality to be realized. In contrast, a claimed computer-readable medium encoded with a computer program is a computer element which defines structural and functional interrelationships between the computer program and the rest of the computer which permit the computer program's functionality to be realized, and is thus statutory. See Lowry, 32 F.3d at 1583-84, 32 USPQ2d at 1035. Accordingly, it is important to distinguish claims that define descriptive material per se from claims that define statutory inventions.

Since the claims are directed to a program, rather than a computer-readable medium with a program encoded thereon, they are functional descriptive material, and therefore non-statutory under 35 U.S.C. 101.

11. Claim 16 is rejected under 35 U.S.C. 101 as not falling within one of the four statutory categories of invention. While the claim recites a series of steps or acts to be performed, a statutory "process" under 35 U.S.C. 101 must (1) be tied to another statutory category (such as a particular apparatus), or (2) transform underlying subject matter (such as an article or material) to a different state or thing (Reference the May 15, 2008 memorandum issued by Deputy Commissioner for Patent Examining Policy, John J. Love, titled "Clarification of 'Processes' under 35 U.S.C. 101"). The instant claim neither transforms underlying subject matter nor positively ties to another statutory category that accomplishes the claimed method steps, and therefore does not qualify as a statutory process.

Claim Rejections - 35 USC § 112

12. The following is a quotation of the second paragraph of 35 U.S.C. 112:

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The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

13. Claims 9-17 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

14. Claims 9-14 and 17 recites an apparatus comprising various means. MPEP 2181 states that, to be statutory under 35 USC 112, a "means for" limitation must either a) be described in specific terms or b) be described in broad generic terms and have specific details incorporated in reference to another document. Essentially, if one skilled in the art can determine the structure or material for performing the recited function from the description in the specification, the requirements of 35 USC 112, second paragraph are satisfied. However, there does not appear to be any structure that ties to the "means" in these claims. The "table development means" do appear to be tied to software, but there is nothing in the specification defining the other various means in the claims.

15. Claim 9 recites that certain "characteristic points" are "determined to be impossible to be interpolated by a process for converting data which is to be performed". Applicant made clear in an interview that the intention of this claim is that the characteristic points are defined as those points that cannot be determined by a particular interpolation process that will later be performed on the set of characteristic points. Examiner agrees that this is one way the claim can be interpreted. However, the claim language is unclear and can actually be interpreted in another way, that being that the "process for converting image data" could be performing determination of which

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points are impossible to be interpolated. Since it is not entirely clear what is being claimed, this claim does not fulfill the requirements of 35 USC 112. Claims 15-17 recite similar limitations.

Claim Rejections - 35 USC § 103

16. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

17. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

18. Claims 9-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bhattacharjya (U.S. Patent 5,809,213) in view of Horikawa (U.S. Patent 5,774,130).

19. As to claim 9, Bhattacharjya discloses:

a lookup table which is composed of characteristic points which are points indicating the relationship between supplied image data and output image data (col. 5, lines 43-50; a lookup table is generated from "augmented sample points" which

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correspond to "characteristic points") which are impossible to be interpolated by a process for converting image data that is performed (fig. 2a, col. 10, lines 40-63; points are sampled from a non-linear function in order to get more samples to linear interpolate from; it is clear from the graph that these points could not be interpolated linearly);

and image data converting means for converting supplied image data by using said lookup table composed of the characteristic points into output image data (col. 5, lines 43-50; a linear interpolation function is used to convert the table value to a calibration values for a color reproduction system).

While Bhattacharjya discloses characteristic points that are impossible to be interpolated by a process, Bhattacharjya does not disclose characteristic points that are *determined* to be impossible to be interpolated by a process to be performed.

Horikawa, however, discloses assigning characteristic points where a curve changes more than a threshold angle (fig. 4a and 4b) so that one can perform interpolation between the points (col. 4, lines 33-44). While it is not explicitly stated, it is clear from the figures that these characteristic points could not be interpolated, and so this curve change detection is *determining* that these points cannot be interpolated. For instance, one attempting to interpolate between points A and C on fig. 4a would not correctly interpolate point B. The motivation for determining characteristic points that cannot be interpolated is to allow a user to save time and still produce an image of acceptable quality if high quality is not desired (col. 1, lines 15-54). While it is noted that Horikawa is not directed to color management, one skilled in the art would recognize that the principles of interpolating a curve would still be very relevant to the problems

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Bhattacharjya and the instant invention are attempting to solve. It would have been obvious to one skilled in the art to modify Bhattacharjya to use characteristic points that cannot be interpolated in order to save time and computing power as taught by Horikawa.

20. As to claim 10, Bhattacharjya discloses an apparatus further comprising table development means for developing said lookup table into the multidimensional lookup table, wherein said image data converting means uses the multidimensional lookup table developed by said table development means to convert supplied image data into output image data (col. 15, lines 34-38).

21. As to claim 11, Bhattacharjya discloses an apparatus wherein said table development means develops said lookup table into said multidimensional lookup table in such a manner that all of characteristic points of said lookup table composed of the characteristic points are contained (col. 5, lines 43-50; a lookup table is generated from "augmented sample points" which correspond to "characteristic points").

22. As to claim 12, Bhattacharjya discloses an apparatus wherein said table development means develops said lookup table into the multidimensional lookup table such that data corresponding to grid points of said multidimensional lookup table is composed of output data of said lookup table and data of information of adjacent grid points for interpolating a portion between grid points (col. 15, lines 34-38; the 3-D lookup table is formed from the interpolation method described earlier, which involves finding points between lookup table points and adjacent grid points from the lookup table).

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23. As to claim 13, Bhattacharjya discloses an apparatus wherein said image data converting means uses an obtained multidimensional lookup table to convert supplied image data into output image data (see rejection to claim 10). Neither Bhattacharjya nor Horikawa discloses that said multidimensional lookup table is a compressed multidimensional lookup table formed by compressing said multidimensional lookup table. Further, neither Bhattacharjya nor Horikawa discloses restoring means provided which restores said compressed multidimensional lookup table into said multidimensional lookup table. However, Official Notice has been taken of the fact that compressing and restoring a color table is well-known in the art (see MPEP 2144.03). It would have been obvious to one skilled in the art to modify Bhattacharjya and Horikawa to compress and restore a color table in order to conserve space in memory.

24. As to claim 14, Bhattacharjya discloses an apparatus further comprising: table recording means for recording said multidimensional lookup table developed by said table development means in a memory (col. 15, lines 34-38; col. 8, lines 53-67); and updating means for operating said table development means and said table recording means when said lookup table composed of the characteristic points has been updated to update said multidimensional lookup table and rewrite the updated multidimensional lookup table on said memory, wherein said image data converting means uses said multidimensional lookup table recorded in said memory to convert supplied image data into output image data (col. 10, lines 19-64; after first sample points are taken, additional sample points are added, the set of both corresponding to the "augmented" set of sample points).

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25. As to claims 15 and 16, see the combined rejections of claims 9 and 10.

26. Claim 17 is rejected under 35 U.S.C. 103(a) as being unpatentable over Bhattacharjya in view of Horikawa and further in view of PNG Specification (<http://www.w3.org/TR/REC-png-961001>).

27. As to claim 17, see the combined rejections of claims 9 and 10. It is further noted that claim 17 recites a "separator" for separating image format data into the supplied image data and color characteristic data. It is noted by examiner that image formats that include color correction characteristic data and would require a "separator" to correctly decode them are known in the art. One such image format is PNG, also known as Portable Network Graphics. PNG stores a gamma value for color correction (section 4.2.3) and requires a decoder to separate this value from other image data for the purpose of performing color correction calculations (section 10.5). The motivation for using this separator is to allow better image display with fewer bits used for storage (see Appendix 13, in particular section labeled "Gamma-encoded samples are good"). It would have been obvious to one skilled in the art to modify Bhattacharjya and Horikawa to use a separator to separate the color correction values in files because this method allows for better image display with less memory use as taught by PNG Specification.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to AARON M. RICHER whose telephone number is

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(571)272-7790. The examiner can normally be reached on weekdays from 8:30AM-5:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kee Tung can be reached on (571) 272-7794. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Aaron M Richer/
Examiner, Art Unit 2628
11/4/08